



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/594,568

11/01/2006

Ralph Edmund Harris

117-604

6594

23117 7590 11/02/2009
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

DITRANI, ANGELA M

ART UNIT

PAPER NUMBER

3676

MAIL DATE

DELIVERY MODE

11/02/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/594,568	Applicant(s) HARRIS ET AL.	
	Examiner Angela M. DiTrani	Art Unit 3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-67 and 76-78 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 41-67 and 76-78 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/07/09, 06/18/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The IDS filed 05/07/09 lists US Patent Number 5,164,009 to Gupta et al. The Examiner would like to note that the cited document number is drawn to an egg marking device, and, therefore, the Patent number provided is believed to be a typographical error. Therefore, the document has not been considered. Correction to cite the appropriate Patent Number issued to Gupta et al. is advised.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 50 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 50 is written in improper Markush form. Revision to include the terminology -selected from the group consisting of- is advised.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 41-46, 50-58, 60-67, 76, and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. (WO 00/57022 – cited previously) in view of Constien (US 6,394,185).

With respect to independent claim 41, Harris et al. discloses a process for disrupting filter cake in an underground formation (p. 2, l. 15-28), which process comprises: dispersing in a

Art Unit: 3676

treatment fluid a solid capable of being converted by hydrolysis into one or more organic acids (p. 3, l. 15-28; p. 5, l. 29 - p. 6, l. 26); introducing the treatment fluid into said underground formation containing said filter cake; and allowing the solid to hydrolyze in the presence of water to produce organic acid such that acid soluble material within the filter cake or adjacent formation is dissolved (p. 3, l. 5-10).

Harris et al. teaches the formation of the treatment fluid by dispersing therein an ester capable of producing an organic acid to dissolve acid soluble material present within the reservoir along with a polymer breaker (p. 3, l. 5-10). The reference, however, fails to explicitly teach wherein a solid polymer capable of being converted by hydrolysis into one or more organic acids is dispersed in the treatment fluid as presented within amended independent claim 1.

Constien teaches reactive materials for degrading or dissolving materials such as drill fluids and solids as well as fluid filter cakes formed therefrom (col. 2, l. 35-38) within a well bore wherein the reactive materials comprise materials including acids, enzymes, surfactants, and chelants (abstract). The reference further teaches several organic acids that are useful in degrading the materials commonly found in such drilling fluids, wherein preferred acids are solids at standard conditions. Such materials include esters which hydrolyze under downhole conditions to form acids, an example of which is glycolic acid that is formed when polyglycolic acid hydrolyzes (col. 6, l. 45-57).

Since both Harris et al. and Constien et al. teach the use of esters capable of producing organic acid upon hydrolysis for the purpose of disrupting filter cake in an underground formation, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute a solid polymer ester as taught by Constien et al. within the

Art Unit: 3676

method of Harris et al. wherein the disclosed ester is dispersed in the treating fluid in order to yield the predictable result of providing a treatment fluid in which the ester is capable of being converted by hydrolysis into one or more organic acids down hole so as to disrupt a filter cake and thereby remove residues and damage from the well bore and formation that inhibit production from the formation.

With respect to depending claims 42-46, Constien et al. teaches wherein the solid polymer is a polyester, wherein the solid polymer is an aliphatic polyester, wherein the polymer is a polymer which comprises one or more compounds selected from the group as claimed, wherein the hydrolysis of the solid polymer produces lactic or glycolic acid, and wherein the solid polymer is polylactic acid or polyglycolic acid as claimed (col. 6, l. 45-57).

With respect to depending claims 50, Constien et al. teaches wherein the solid polymer is used in a form selected from the group as claimed (col. 6, l. 45-57).

With respect to depending claim 51, Harris et al. discloses incorporating a buffer into the treatment fluid (p. 5, l. 7-27).

With respect to depending claims 52-58, Harris et al. discloses incorporating one or more polymer breakers into the treatment fluid (p. 3, l. 30 – p. 5, l. 27; p. 7, l. 25 – p. 11, l. 2), and, further wherein the polymer breaker is a hydrolase enzyme (p. 9, l. 5-10), a polysaccharide hydrolyzing enzyme (p. 8, l. 12-19), a polymer breaker which can hydrolyze starch, xanthan, cellulose, guar, scleroglucan or succinoglycan or a derivative of any one of the polymers (p. 8, l. 17-19), an oxidant, wherein the oxidant is selected from the group as claimed (p. 7, l. 28 – p. 8, l. 5; p. 8, l. 21 – p. 9, l. 3), and wherein the polymer breaker is in the form of a delayed release preparation (p. 13, l. 16-17).

With respect to depending claim 60, Harris et al. discloses wherein the treatment fluid disrupts or degrades at least a portion of the filter cake and increases the permeability of the formation (p. 2, l. 15-28; p. 14, l. 13-25).

With respect to depending claim 61, Harris et al. in view of the solid polymer as taught by Constien et al., teaches wherein at least a portion of the polymer remains in the underground formation and continuously releases organic acid and a production chemical during hydrocarbon production or water injection until the polymer has completely hydrolyzed (col. 6, l. 28 - p. 7, l. 2; p. 14, l. 27-30).

With respect to depending claim 62, Harris et al. discloses wherein at least a portion of the polymer remains in the underground formation wherein the underground formation contains a hydrocarbon or water and wherein the process further comprises recovering hydrocarbon or water from the treated formation (p. 3, l. 12-13; p. 14, l. 29-30).

With respect to depending claim 63, Harris et al. discloses wherein the treatment fluid is introduced into the formation via a well bore which extends to the formation (p. 2, l. 15-27; p. 14, l. 4-30).

With respect to depending claims 64 and 65, Harris et al. discloses the method as provided above with respect to independent claim 41, and, further, wherein the treatment fluid is capable of breaking polymers such as xanthan, cellulose, and guar (p. 8, l. 17-19). The reference, however, fails to explicitly disclose wherein the treatment fluid comprises an acid sensitive viscosifying agent, wherein the viscosifying agent is crosslinked guar gum, and wherein the viscosity of the fluid is reduced by the acid generated by hydrolysis of the solid polymer as claimed. The Examiner hereby takes Official Notice in that it would have been obvious to one

Art Unit: 3676

having ordinary skill in the art at the time the invention was made to provide for a viscosifying agent, such as crosslinked guar gum, within the treatment fluid of Harris et al. in order to viscosify the fluid within those environments in which an increased viscosity is required to deliver the treatment fluid to the formation, insofar as because the use of crosslinked guar gum to viscosify fluids is well known within the art. Since Harris et al. discloses the capability of the treatment fluid to break polymers including guar, the viscosity of the crosslinked guar gum is capable of being reduced by the acid generated upon hydrolysis of the solid polymer as claimed.

With respect to depending claim 66, Harris et al. discloses wherein the treatment fluid further comprises calcium peroxide wherein the organic acid produced by hydrolysis, of the solid polymer in view of Constien et al., leads to the generation of hydrogen peroxide (p. 5, l. 4-5).

With respect to depending claim 67, Constien et al. teaches wherein the treatment fluid further comprises ammonium bifluoride and wherein the organic acid produced by hydrolysis of the solid polymer leads to the generation of hydrogen fluoride (col. 6, l. 58-67).

With respect to new claim 77, Constien et al. teaches wherein the polymer is a polymer which comprises one or more compounds selected from the group as claimed (col. 6, l. 54-57).

6. Claims 47-49 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. in view of Constien et al. as applied to claim 41 above, and further in view of Willberg et al. (US 7,265,079 – cited previously).

With respect to depending claims 47-49 and 76, Harris et al. in view of Constien et al. teaches the method as provided above with respect to independent claim 41, and, further, wherein the treatment fluid comprises an acid, along with other materials, such as oxidants and enzymes. These other material are disclosed by Harris et al. to have functional activity for filter

Art Unit: 3676

cake treatment or as production chemicals (p. 13, l. 19- p. 14, l. 2) as claimed in further depending claims 49 and 76. The combination, however, fails to teach wherein the one or more other materials are incorporated into the solid polymer by encapsulation to allow their release coincident with or after acid production or wherein the one or more other materials are incorporated into the solid polymer by dissolution or dispersion to allow their controlled release coincident with acid production as claimed. Willberg et al. discloses incorporation of additional materials that react with the hydrolysis products wherein the additional materials can be incorporated with the solid polymer or encapsulated therewith, for the purpose of providing for the release of both components at the same location at the desired time. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the other materials used within the treatment fluid of Harris et al. with the solid polymer by dissolution or dispersion or by encapsulation in order to release both components at the desired location within the well so as to enhance the filter cake and well bore clean-up obtained therewith.

7. Claim 59 and new claim 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. in view of Constien et al. as applied to claim 41 above, and further in view of Harris et al. (WO 01/02698 – cited previously, '698 herein).

Harris et al. in view of Constien et al. teaches the method as provided above with respect to independent claim 41 wherein Harris et al. further teaches wherein the treatment fluid comprises one or more polymer breakers and Harris et al. in view of Constien et al. teaches wherein the fluid comprises one or more solid polymers. The combination, however, is silent to wherein the treatment fluid is a gravel packing fluid as claimed within depending claims 59 and

Art Unit: 3676

78. '698 teaches a method of treating a subterranean formation wherein the treatment fluid may comprise an ester dispersed in water that hydrolyzes to produce an organic acid to dissolve acid soluble material present within the reservoir wherein the fluid may be incorporated within a gravel packing fluid for the purpose of treatment of filter cakes following gravel packing operations by incorporation of suitable components into the gravel packing fluid (p. 3, l. 4-7). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the treatment fluid of Harris et al., in view of the solid polymer teaching of Constien et al., as a gravel packing fluid in order to treat a filter cake following a gravel packing operation, thereby enhancing subsequent production from the gravel packed well.

Response to Arguments

8. Applicant's arguments, with respect to the claim objections to claims 41, 54, 55, and 61 and the claim rejections under 35 USC 112 of claims 44 and 59 have been fully considered and are persuasive. The noted objections and rejections thereof have been withdrawn.

9. Applicant's arguments, with respect to the 35 USC 102(b) rejection(s) of claim(s) 41-45, 51-58, 60-63, and 66 as unpatentable over Harris et al. have been fully considered in light of Applicant's amendments to the claims and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made under 35 USC 103(a) of claims 41-46, 50-58, 60-63, 66, 67, and 77 as unpatentable over Harris et al. in view of Constien et al.

10. The Examiner would like to note that the rejections of the remaining claims as set forth above under 35 USC 103(a) in light of the new rejection of independent claim 41 as unpatentable over Harris et al. in view of Constien et al. renders the claimed subject matter obvious.

Art Unit: 3676

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. DiTrani whose telephone number is (571)272-2182. The examiner can normally be reached on M-F, 6:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on (571)272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer H Gay/
Supervisory Patent Examiner, Art Unit
3676

AD
10/26/09